

# Where we began - the NIKE-ZEUS Program

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**JAN. 16, 1958** — Secretary of Defense Neil H. McElroy assigns the primary mission of ballistic missile defense to the U.S. Army.

In the 1950s, both the Army and the Air Force were developing ballistic missiles and exploring anti-missile technologies, resulting in duplication of effort and a rivalry between the services. The sense of urgency for this technology was heightened by the Soviet launch of an Intercontinental Ballistic Missile (ICBM). In August 1957, anti-missile system development received the highest national priority. Toward the end of the decade, Secretary of Defense Neil McElroy officially defined the missile defense roles and missions for the various services. Based on early successes with the NIKE-ZEUS system, the Army was given responsibility for the ballistic missile defense mission, to include interceptor missiles, launch sites, tracking radars and computer equipment. The Air Force would develop early warning radars and communication links.

The lion's share of this mission would fall on an obscure project office at Redstone Arsenal, Ala. Less than a year old, the Redstone Anti-Missile Missile Systems Office (RAMMSO) was established on Oct. 3, 1957, with the mission to develop the NIKE-ZEUS anti-missile system. Through the next 50 years, RAMMSO and its mission would evolve to become the U.S. Army Space and Missile Defense Command/Army Forces Strategic Command in 2003.

NIKE-ZEUS built on previous Army interceptor and radar technology from the NIKE-AJAX and NIKE-HERCULES programs. The earlier missiles were designed to defend against high-altitude nuclear armed strategic bombers. Between 1954 and 1958 two hundred NIKE-AJAX launch facilities were deployed around key urban, military and industrial areas of the United States. The NIKE-AJAX batteries were later upgraded to nuclear-tipped HERCULES missiles in the early 1960s.

## An Aggressive Test Program

As NIKE-AJAX and HERCULES continued to defend against Soviet bombers, the RAMMSO and its successor organization the U.S. Army Rocket and Guided Missile Agency (ARGMA) began testing the NIKE-ZEUS system in 1959. Initial booster and flight testing occurred at White Sands Missile Range, N.M., and Point Mugu, Calif. The first integrated system test resulted in the successful intercept of a NIKE-HERCULES missile over White Sands on Dec. 14, 1961. The ZEUS interceptor passed within 100 feet of the target missile, well within the distance defined for a successful nuclear intercept.

When intercept tests against long range ballistic missiles were required, test operations were established at a remote, obscure naval base in the central Pacific. Kwajalein Atoll

presented the most logical solution for testing with its existing logistical infrastructure and distance from target launch locations at Vandenberg Air Force Base, Calif. Integrated system testing began at Kwajalein as interceptor testing was still being conducted at White Sands and Point Mugu. In fact on Dec. 14, 1961, the NIKE-ZEUS program accomplished an amazing feat, conducting three separate tests, at these three different installations almost simultaneously.

The first attempted NIKE-ZEUS intercept of an ICBM in June 1962 failed due to a radar malfunction. The second attempt in July was more successful. The third test on Dec. 12 was a complete success. An Atlas D nose cone traveling at 16,000 miles per hour was intercepted over the Pacific Ocean. A wire service reporter declared the test a "majestic bull's-eye...a bullet hitting a bullet". Ultimately, the NIKE-ZEUS test program conducted 79 developmental and 68 system tests with a total of 147 launches over a seven year period.

## Project MUDFLAP

As ARGMA was diligently designing and testing the NIKE-ZEUS system, a new requirement for the program was announced by Secretary of Defense Robert McNamara in April 1962. The NIKE-ZEUS project was to provide the capability to defeat an orbiting Soviet satellite which, it was believed at the time, would have the ability to drop nuclear bombs to the surface of the earth. Known as Project MUDFLAP, the project was given one year to demonstrate this capability. Testing began at White Sands in December 1962 with a modified ZEUS missile and ultimately reached altitudes of over 150 nautical miles. In March 1963, testing moved to Kwajalein where a ZEUS missile intercepted an AGENA D satellite in May 1963. From that moment forward the MUDFLAP missiles and personnel at Kwajalein remained in a state of readiness to launch a ZEUS in an anti-satellite mode. Training and test launches continued in 1964 until the anti-satellite mission was terminated.

## The NIKE-ZEUS Legacy

Although the NIKE-ZEUS system achieved success in its ability to intercept warheads and satellites, those tests also revealed shortcomings in its mechanically steered radars. Opponents argued that a saturation attack that would overwhelm the radars which were only able to focus on one target or interceptor at a time. As a result, officials decided in January 1963 not to deploy the NIKE-ZEUS. Instead, the program, now known as NIKE-X, would continue in a research and development mode, focusing on the evolving threats of the 1970s. Nevertheless, the lessons learned from the successes and failures of NIKE-ZEUS system tests were vitally important in the development of follow-on systems including SAFEGUARD, the free-world's first deployed and operational ABM system.



Col. Ivey Drewry and C.A. Warren of Bell Labs inspect the new NIKE Office sign at bldg. 4505, Redstone Arsenal, Ala.



An early "winged" NIKE-ZEUS launches at White Sands Missile Range.



Installing the Radome on the Target Track Radar